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CONTRACTORS AND ENGINEERS:
Vital Assets for the Joint Force Commander

by

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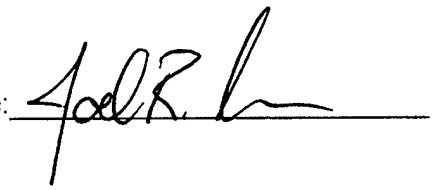
A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Maritime Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: 

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The effective integration of contractors with engineers into Military Operations Other Than War (MOOTW) increases operational flexibility for the JFC that can be used as a force multiplier. Synchronizing the efforts of contractors and engineers throughout the operation becomes the key to realizing this benefit.

More operational deployments loom on the horizon and JFCs must act now to improve the integration of contractors and engineers and enhance operational effectiveness. Political changes, technological advances, limited strategic resources, and the increasing requirements for simultaneous operations across the entire spectrum of MOOTW demand it.

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INTRODUCTION

> At the height of the effort [base camp construction in Kosovo], about 1,000 expatriates hired by Brown & Root, along with more than 7,000 Albanian local nationals, joined the 1,700 military engineers. From early July and into October, construction at both camps continued 24 hours a day, 7 days a week.... In the end, more than 700,000 cubic feet of living space had been built--equal to a subdivision of 355 houses--all in less than 90 days![1]

This amazing accomplishment highlights the efforts of the civilian contractors and their integration on the battlefield. Contractors currently provide crucial support to U.S. Armed Forces operationally deployed to Kosovo, Bosnia-Herzegovina, and stationed around the world. U.S. Armed Forces rely heavily on contractors to support operations because of limited resources, readiness concerns, and the increasing number of deployments. Because of the increased reliance on contractors, geographic combatant commanders (CINCs) and joint force commanders (JFCs) must fully plan for their integration into all aspects of Military Operations Other Than War (MOOTW).

The integration of contractors on the battlefield has been the subject of intense debate within the military community for more than five years. Yet, the bottom line remains the same; contractors are here to stay. Contractors are critical assets for the JFC in MOOTW because their effective integration increases operational flexibility, which is an absolute necessity for mission success. However, JFCs are not integrating contractors into engineer operations as effectively as they could. Reviews of recent operations show improvements in this area are needed. Joint force commanders need to do a better job planning for the integration of contractors and transitioning to contractor support to enhance their operational effectiveness. The JFC will gain operational flexibility and enhanced mission support by improving these areas.

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[1] Robert L. McClure, "The Engineer Regiment in Kosovo," Engineer (April 2000): 8.

THE MOOTW ENVIRONMENT

Joint force commanders must understand the MOOTW operational environment to employ contractors effectively. A MOOTW generally occurs in a permissive environment. However, in some cases, the probability of hostilities is heightened and the impact on operations must be addressed. Deterring war, resolving conflict, promoting peace, and supporting civil authorities are the focus of MOOTW.[2] From Humanitarian Assistance operations to Peace Operations, their unfamiliar nature dramatically increases the operational complexity.

To guide the JFC through MOOTW there is set of basic principles. The JFC achieves the desired operational end-state by properly applying the principles of security, legitimacy, unity of effort, restraint, perseverance, and objective. When determining how properly integrate contractors and engineers in MOOTW the principles of legitimacy, security, and perseverance help guide the JFC.

Legitimacy, often decisive in MOOTW, is a condition based on the perception by a specific audience of the legality, morality, or rightness of a set of actions. An operation perceived as legitimate normally fosters strong support. While illegitimate operations may create strong opposition. In MOOTW, selecting particular forces for a mission can increase legitimacy for the operation.[3] In Kosovo, the JFC used contractors to handle base operations, thus allowing engineers to focus on civic action projects directly related to restoring regional stability.[4] This engineer effort showed the refugees U.S. forces were there for the right reasons.

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[2] Joint Chiefs of Staff, Joint Doctrine for Military Operations Other Than War, Joint Pub 3-07 (Washington, DC: 16 June 1995), I-1.
[3] Ibid., II-5.
[4] Paul C. Stephenson, "Engineers Keep the Peace in Kosovo," Engineer (February 2000): 6.

The principle of security also affects the use of contractors. According to Joint Doctrine, "This principle enhances freedom of action by reducing vulnerability to hostile acts, influence, or surprise."[5] The JFC is legally bound to protect contractors, who can not bear arms, and must determine how to do this in the given environment. One source says this makes contractors a critical vulnerability.[6] Sometimes I agree. However, if the JFC has the ability to continue support when contractors fail, then they are not a critical vulnerability. In MOOTW, the need to provide security for contractors is constant while the degree of effort depends on the environment. These security concerns can affect the timing of the contractor flow (operational sequence) into the joint operations area (JOA) and their subsequent integration on the ground.

Perseverance is the last principle that has significant influence on the integration of contractors and engineers. In MOOTW, perseverance is the steadfast adherence to a course of action. According to Joint Doctrine, "Some MOOTW may require years to achieve the desired results."[7] Because of the anticipated long duration, contractors become essential force multipliers by replacing or assisting military units, which creates some operational flexibility for the JFC. A good example is operations in Bosnia. The U.S. military deployed to Bosnia in 1995. Once contractors established themselves in the JOA, the JFC was able to reduce the size of the deployed force by approximately 8,900 logistics and combat support troops. These forces then focused on their primary mission, wartime readiness, and remained a viable asset for the CINC to use for flexible deterrent operations (FDO) or other small-scale contingencies (SSC).[8]

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[5] Joint Pub 3-07, II-3.
[6] Patrick J. Dulin, "Logistics Vulnerabilities in the Future," Army Logistician (January-February 1998): 20-23.
[7] Joint Pub 3-07, II-4.
[8] Donald Wynn, "Managing the Logistics-Support Contract in the Balkans," Engineer (July 2000): 40.

CONTRACTORS AND ENGINEERS

To plan for contractor integration into engineer missions the JFC must know what types of contractors and engineers are available. Over the past decade, contractors have grown from small local companies to large corporations with global reach and access. Joint Doctrine acknowledges three types of contractors: System Support, External Theater, and Theater Support contractors.

System Support contractors are used to maintain and upgrade a single system throughout the system's life cycle. They have negligible impact at the operational level of MOOTW. External Theater contractors provide support to operationally deployed forces that includes, but is not limited to, major construction, laundry services, feeding facilities, fueling services, stevedoring services, and transportation. The efforts of Brown & Root Service Corporation (BRSC) in the Balkans are a good example.

> From 12 June to 30 September 1999, the contractor provided 15,559 trusses, 7,222 sidewalls for SEA-hut construction; assembled 192 SEA-huts with Navy and Army engineers; and erected two temporary dining facilities, 13 helipads, 2 aviation-maintenance clamshells, 12 temporary mess-kitchen-trailer dining facilities, and 37 temporary shower units. While supporting this intensive effort, Brown & Root also supplied 1,134,182 high-quality meals, 55,544,000 gallons of water, and 383,071 gallons of diesel fuel. The contractor also serviced 671 portable latrines, collected 89,228 cubic meters of trash, and loaded/offloaded 4,299 containers.[9]

This type of contractor, normally prearranged by component commanders, must deploy to support the operational force. The last type is a Theater Support contractor. Theater Support contractors come from inside the JOA and normally provide goods, services, and minor construction.[10] The JFC's use of External and Theater Support contractors has the greatest influence on the selection and operational sequencing of engineer forces.

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[9] Ibid., 36.

[10] Joint Chiefs of Staff, Doctrine for Logistic Support of Joint Operations, Joint Pub 4-0 (Washington, DC: 6 April 2000), V-1.

Component commanders maintain a robust engineering force to meet the needs of the CINCs. A list of their respective capabilities is included at Appendix A.[11] Supporting maneuver forces, building force protection measures, and conducting large-scale construction operations are the main effort of engineers in MOOTW. The most important limitation of engineers that JFCs must consider is the large amount of strategic lift required to move their equipment. This can easily alter a JFC's decision on who to use and when to use them. The JFC for Kosovo operations used air-deployable Air Force and Navy engineers to provide initial construction support. These units required fewer strategic lift assets and could deploy faster than other units with the same capabilities. This allowed the JFC to quickly initiate road and airfield upgrades to support the overwhelming flood of refugees leaving Kosovo.[12]

KEY PLANNING TOOLS

The long-range estimate of the situation (LRES) is the best planning tool that helps the operational commander make decisions on contractor use. The JFC's staff prepares the LRES for the JFC who makes a decision on a course of action (COA) for the major operation or campaign. Conducting detailed assessments of operational factors space, force, and time during the LRES gives the JFC the information necessary to make wise decisions on how, when, and where to integrate contractors.[13] At the operational level, the planning for MOOTW is more intense and cumbersome than the planning for war. Joint Doctrine states "The mission analysis and command estimate processes are as critical in planning for MOOTW as they are in planning for war."[14] Lessons from recent MOOTW in the Balkans

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[11] Joint Chiefs of Staff, Joint Doctrine for Civil Engineering Support, Joint Pub 4-04 (Washington, DC: 26 September 1995), I-3.
[12] Department of Defense (DOD), Report to Congress on Kosovo/Operation Allied Force After-Action Report, (Washington, DC: 31 January 2000), 103.
[13] Milan Vego, On Operational Art (Newport, RI: Naval War College, September 1998): 339.
[14] Joint Pub 3-07, IV-1.

show JFCs make the majority of their mistakes concerning contractor support during the LRES.

> In contrast, ground and sea infrastructure capabilities were not assessed until later in the operation. As a result, planners lacked sufficient information to make informed decisions about the desirability of employing additional assets.... Similarly, planners could have deployed engineers or mobilized contractors to enhance the transportation infrastructure as necessary. Decisions to deploy these forces need to be made early in the operation....[15]

This illustrates what happens when the process fails. Conducting a poor initial assessment or failing to make reassessments during the operation can lead to many "knee-jerk" reactions.

Operational phasing is also essential to understand effective contractor integration. Phasing compartmentalizes an operation into easily definable segments. The phases of plan, deploy, execute, and redeploy generally characterize operations other than war.

PLANNING OPERATIONS WITH CONTRACTORS

The planning phase sets the stage for contractor integration. Detailed planning is absolutely essential to achieve a sequenced and synchronized team effort between contractors and engineers. The analysis of operational factors space, force, and time during the LRES provides the greatest contribution to planning successfully for contractor integration. Two essential considerations for the operational factor force are the available type of engineers and contractors and the force size restraint. The JFC/CINC considers all available engineer capabilities from component commanders, contractors, and reserve forces when selecting forces for the operation. Joint engineers provide the JFC an initial-entry capability to rapidly deploy and start work in all environments. Historically, contractors do not. This is the most significant contrast between military engineers and contractors and makes engineers the best choice for initial-entry operations. Military engineers are combat soldiers first and skilled

[15] DOD, 38.

tradesmen second. Recent operations in the Balkans illustrate this point. The Army's initial contract required BRSC to provide initial-entry sustainment engineering, but they could not.

> As the deployment drew closer, it was clear that the contractor could not construct all the needed camps in the limited time available. The base camp plan was modified to request the support of U.S. Navy Seabees and Air Force Red Horse construction units for the building of initial base camps and troop bed-down facilities.[16]

This caused "knee jerk" reactions to deploy additional engineers to the JOA quickly. In most cases, contractors do not provide a solid initial-entry capability, however they are extremely effective in a follow-on support role.

When developing operational plans for MOOTW, missions for engineers should include: improving austere living conditions, extending lines of communications, supporting air and seaport development, conducting extensive countermine and force protection operations, repairing infrastructure, working on civic action projects, and providing environmental support to deployed forces. Engineers seem like the perfect answer, but remember their significant limitation. Engineer equipment and materials require vast amounts of strategic airlift or sealift to move. When strategic lift is constrained, this can affect the JFC operational scheme. During Operation Allied Force, Albania's limited infrastructure made engineering assets essential to the operation. However, moving them to Albania would use too much strategic lift and adversely affect the CINC's concept of the operation. The CINC's main effort was to maximize combat forces in the JOA.[17] The CINC chose to deploy an initial-entry engineer capability from military units and relied on contractors for follow-on support. This was very effective; however, the JFC chose to assume risk with operational mobility by using fewer engineers than the original assessment

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[16] Shep Barge, "Base Camp Construction and Operation," Center for Army Lessons Learned: News from the Front, May-June 1996. <http://call.army.mil/call/nftf/may_jun.96/mj96-2.htm/> [6 December 2000].
[17] DOD, 102.

recommended. If Task Force Hawk in Albania had been required to conduct an attack, their ground maneuver would have been substantially degraded by the lack of military engineer support.

Another risk the JFCs deal with is the probability of mission failure when contractors fail. This should be a serious issue for the JFC. Contractors are civilians and the risk of them not being there when bullets start to fly is real.[18] If hostilities were to escalate in Kosovo, and BRSC left the JOA, the JFC would still have to run all the services provided by the contractor.

Joint force commanders must also realize they do not have command and control over the contractors. The JFC's contracting officer provides the supervisory role based on the requirements in the written contract. Any changes to the contract desired by the JFC may take time to negotiate; this may limit operational flexibility.

The JFC often deals with force caps in MOOTW. Here, a JFC can use contractors to maximize combat forces. Host Nations (HN), the United Nations, Status of Forces Agreements (SOFA), and the United States have all been responsible for imposing force caps on operations. Former U.S. President Bill Clinton promised to limit the number of troops in Bosnia to less than 20,000. He then deployed over two thousand contractors to "beef up" support for the military force.[19] Operations in Haiti also experienced this phenomenon.

> ...the services provided by the contractor reduced the Army requirement to deploy an entire Corps Support Command (COSCOM) into theater.... This left a COSCOM free to resume its primary support mission or deploy to some other contingency. Additionally the contractor's manpower does not count against the UN headcount

[18] "At the beginning of the Pacific War, it became clear that the Navy could not rely on civilian workers for construction in combat zones. Civilians not only lacked the military training to defend themselves and what they were building but, under international law, they could be executed as guerrillas if caught bearing arms." Vincent Transano, "Birth of the Seabees," Military Engineer, 84 (July 1992): 76.
[19] Katherine M. Peters, "Civilians at War," Government Executive (July 1996): 27.

ceiling, therefore more combat arms and combat support units could be put into theater without degrading combat service support.[20]

Using contractors to replace military forces can increase a JFC's operational flexibility. It provides the JFC more available forces to deal with unexpected situations.

The most important element of the operational factor space that affects the integration of contractors and engineers is the assessment of the existing theater support structure. This helps the JFC's staff determine what types and when to use engineers and contractors. A mature theater usually has well-developed infrastructure, abundant HN support for goods and services, and established Theater Support contractors. This is the ideal situation to benefit from the use of contractors. Contractors already in theater can provide immediate support to deploying forces and reduce the requirement for military engineers.

On the other hand, immature theaters normally have limited infrastructure, minimal HN support, and no existing Theater Support contractors. This increases the need for engineering assets and decreases initial contractor capabilities. Destroyed infrastructure, questionable security, and restrictive LOCs will increase the time contractors need to set up operations. Most External Theater contractors are required to deploy within 72 hours notice, provide initial support within 15 days, and full support at 30 days, but they have been historically unable to do this.[21] Joint Force Commanders must understand the existing theater structure to determine the best way to use contractors.

Two good examples of how the theater structure influenced contractor integration are operations in Bosnia and Kosovo. In 1996, BRSC was unable to provide initial-entry

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[20] Department of the Army (DA), Initial Impressions on Haiti (Fort Leavenworth, KS: U.S. Training and Doctrine Command, Center for Army Lessons Learned, July 1995), 174.
[21] Maria Dowling and Vincent Fleck, Feasibility of a Joint Engineering and Logistics Contract (Maxwell Air Force Base, AL: Air University Press, 1999), 6.

engineering for forces deploying to Bosnia. The existing theater structure was immature, highly damaged, and without established Theater Support contractors. Here BRSC provided follow-on engineering that is still operating successfully today. However in 1999, BRSC in Kosovo was able to provide initial-entry engineering to augment engineer forces. Kosovo is located in the same area as Bosnia-Herzegovina and this allowed them to act as an established Theater Support contractor. The combined efforts of the contractors and joint engineers in Kosovo quickly and securely bedded down the JFC's peacekeeping force of over 7,000 troops before the harsh Balkan winter began.[22]

The JFC's evaluation of available forces and theater structure, a space-force element, provides the basis for positioning engineers on the time-phased force deployment data (TPFDD). The TPFDD tells engineers when they will deploy. Contractors normally require no military assets to deploy. Effectively integrating contractors into engineering reduces the requirement for military engineers and the strategic lift to deploy them. This gives the JFC more flexibility allocating lift assets to forces on the TPFDD, which could increase operational flexibility.

Small or restrictive lines of communications (LOCs) can counteract the flexibility gained from changes in the TPFDD. Although contractors normally require no military assets to deploy, restrictive LOCs can obstruct deployment flows and cause serious delays. Contractors often compete with military forces for the same ports, roads, and airfields (a space-force element). This can overload LOCs and stop the movement of resources.

The TPFDD results from the LRES and is vital to the JFC's operational scheme. Military engineers are normally front loaded on the TFPDD. This ensures engineering

[22] McClure, 2.

support is immediately available to deploying forces in all environments. Operations in Haiti illustrate what happens when planning fails.

> Without the Engineer Brigade's involvement in the planning process, critical engineer issues were overlooked until the last minute. Two examples are Class IV (wood, wire, and fencing) for force protection and base camp construction. Last minute requisitions... required special adjustments to both air and sea flow so they would arrive in a timely manner. However, the quantities were reduced because of lack of time to procure additional materials.[23]

The reduced quantities of materials degraded the engineer's ability to quickly construct safe and secure facilities for the joint force.

This most important element of the operational factor time is the anticipated duration of the operation. Operations other than war tend to last a long time (perseverance). This reduces the number of troops free for FDOs or other SSCs. The JFC's prudent use of contractors during long term operations will free military units and increase operational flexibility.

EXECUTING OPERATIONS WITH CONTRACTORS

Lessons from the Balkans show JFCs need to do a better job clarifying contractor and engineer roles and missions during the execution of the operation. This will improve the synchronization of engineering efforts, increase flexibility, and achieve a well-coordinated engineer end state.

The JFC's first objectives are to establish a base of operations (lodgment) and security for follow-on forces. Accordingly, all engineering efforts should focus on these objectives. Military engineers are the best choice for the early stages of the operation and their main effort should be force protection. They can rapidly deploy and provide their own

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[23] DA, Operation Uphold Democracy Initial Impressions, Dec 94, D-20 to D+40 (Fort Leavenworth, KS: U.S. Training and Doctrine Command, Center for Army Lessons Learned, December 1994), 185.

security while they work. Contractors, normally absent in the early stages, do occasionally provide initial-entry engineering as already discussed. If this happens, the contractor main effort should be base operations and infrastructure, thus allowing engineers to put more effort on force protection, expanding the lodgment, and supporting peace operations to achieve the operational end state.

After the lodgment is established, the JFC's main effort shifts to the buildup of forces and a reassessment of operational requirements. This phase should include the transition to contractors. Contractors, once established, take over base operations, life support functions, and base camp construction. Keeping contractors isolated initially to base operations reduces their footprint and their exposure to hostilities. This minimizes the security requirements for the contractors until the majority of forces arrive. When contractors are a critical vulnerability, this becomes essential to mission success. Minimizing the security requirement better equips the JFC to respond to unexpected events in the JOA. According to an article published in the Naval War College Review, "...the lessons learned from recent operations tie success directly to the flexibility that only delegated leadership on the ground can achieve."[24] At this phase of the operation, the engineer main effort is still force protection.

The transition sounds easy, but it is fraught with problems. The JFC must decide where and when the transition to contractors will occur. There are no simple answers to these questions; however, I believe the key to answer "where?", lies in the assessment of the required security posture and the existing theater structure. Contractors typically bring large quantities of equipment and require substantial space for operations and maintenance. The

[24] Susan L. Woodward, "Failed States: Warlordism and 'Tribal' Warfare," Naval War College Review (Spring 1999): 66.

infrastructure and security of the environment may, or may not, support a separate facility for contractors. The JFC must consider the advantages and disadvantages of housing them inside the base camp if necessary to accomplish the mission. Housing them inside causes additional drain on resources, but the added security benefit may be essential to success. Furthermore, the JFC must decide when the transition will occur. The key to this answer lies in the JFC's assessment of the operation's duration, security posture, and troop-to-task ratio.

In MOOTW, there are always more missions for engineers than assets available. Therefore, prioritization becomes the rule. MG Philip Anderson, Deputy Commander of U.S. Forces in Haiti from June to November of 1995, expressed this opinion.

> I can't overemphasize the importance of prioritizing the engineer effort. With more projects than we could ever complete, we had to evaluate construction requirements and select projects with the greatest payoffs. We always focused on work we were capable of doing that had the greatest benefit to the overall mission.[25]

Transitioning to contractors early in the operation could give the JFC more engineers to focus on the main effort. That is the big benefit of an early transition; the JFC gets more "bang for the buck" from military engineers. As MG Anderson also stated, "...engineers really did make a major contribution toward the long-term security and stability of Haiti and... engineers are a major contributor in these kinds of contingencies toward winning and maintaining peace."[26] The disadvantage of transitioning too early is adding another manpower task to protect the contractors. Troop requirements can easily overburden a Joint Task Force (JTF) early in the operation. This becomes a critical disadvantage when troops are diverted from other vital missions to protect contractors. The JFC must weigh the

[25] Catherine Eubanks, "Engineer Roles in Stabilizing Haiti," Engineer (March 1996): 26-27.
[26] Ibid., 27.

benefits and burdens and determine when to conduct the transition to contractors based on their evaluation of the operation's duration, security posture, and troop-to-task ratio.

Operations other than war perpetually link contractors and engineers. Contractors perform engineering functions freeing engineers for use elsewhere. This makes the JFC's integration of contractors and engineers essential; their effective combination becomes a critical force multiplier. Once the transition is complete, contractors ideally manage all base operations functions and share the workload in infrastructure repair. The engineer main effort shifts to supporting peace operations. Engineers conduct patrols to restore stability, support civic action projects, demine to prevent injuries, and other missions required. In Haiti, after the transition, contractors managed laundry, showers, field sanitation, maintenance, construction & materials, bulk water distribution, food, and fuel. While engineers built power production facilities, multipurpose ranges, joint detention facilities, ammunition supply points, and civic action projects not to mention support to maneuver forces.[27] The multipurpose ranges are a great example of how a JFC used the flexibility gained from integrating contractors to maintain the JTF's combat effectiveness. Contractors and engineers are a powerful combat force multiplier for the JFC.

Another example comes from engineer operations in Kosovo. The JFC's use of BRSC for base operations allowed an engineer company to reorganize as infantry and conduct presence patrols near the city of Gnjilane to restore order.[28] This is a mission only a military unit can do and using contractors freed engineers to do it.

Past Operations clearly show the United States has little patience for protracted illegitimate operations. The JFC's use of engineers can increase the perception of legitimacy

[27] DA, 10th Mountain Division: Operations in Haiti, (Fort Drum, NY: 1995): 17-3, 17-4.
[28] Stephenson, 6.

at home and abroad. Operation Joint Endeavor in Bosnia illustrates this view. The JTF's mission was to restore regional stability. This was a Peace Operation and Humanitarian Assistance mission in one. Americans and Bosnians expected the U.S. military to stop the fighting make daily life better. Destroyed infrastructure, refugees, unexploded ordnance, and hazards littered the countryside. In some areas, entire communities were destroyed. Engineers increased legitimacy by focusing on missions directly related to the peoples' expectations. Repairing infrastructure, rebuilding schools and hospitals, marking minefields, and conducting combat patrols to restore order were the engineer main effort. These missions provided tangible proof to all observers that life was getting better. Engineer efforts during Operation Uphold Democracy also support this view.

> Engineer experiences in Haiti epitomize the enormous combat multiplier that engineers represent. No other group in Haiti performed a fraction of the tangible work.... Their efforts translated directly into better living and working conditions for U.S. soldiers, U.N. forces, and the Haitian people.[29]

MG Anderson also recognized how engineers can influence perceptions of outside agencies. He stated, "But on a regular basis, the Haitian people and many international observers measured progress through our engineer projects."[30] These examples show how the effective use of engineers can increase legitimacy. Army and Air Force Doctrine simply state, "that no group or force can create legitimacy for itself, but it can encourage and sustain legitimacy by its actions."[31] Selecting missions for engineers and contractors can have a noteworthy effect on legitimacy at the operational level.

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[29] Darren Klemens and Kelly Slaven, "Task Force Castle: Joint Engineer Operations in Haiti," Engineer (April 1995): 43.
[30] Eubanks, 26.
[31] DA, Military Operations in Low Intensity Conflict, FM 100-20/AFP 3-20 (Washington, DC: 1990), 1-6.

Legitimacy is not an easy principle to apply. Take for example the rules of engagement (ROE) in the Balkans forbidding U.S. engineers from conducting demining operations. Should JFCs allow U.S. engineers to participate in these types of missions? Many leaders have recently asked this question. I think the answer is knotted in risk, acceptability, casualty aversion, legitimacy, value to the mission, and value to the engineers. Based on acceptability and casualty aversion, some leaders believe risky missions like this do not have the public support and could lead to operational failure when there is a casualty. Other leaders make strong arguments in favor of these missions placing emphasis on the benefits in legitimacy and experience for the engineers.[32] This is probably the toughest question facing JFCs today on the correct use of engineers in MOOTW.

The final concern in execution is the competition for construction resources. Materials for vertical and horizontal construction are usually in short supply during the early stages of the operation. Limited strategic lift, theater structure, and the priorities for the deployment of troops vs. materials cause this. Here also, prioritization is the rule. The JTF staff's failure to manage construction materials used by both contractors and engineers usually results in a "first come, first served" approach.[33] This rarely produces the JFC's desired engineer end state. The JTF staff cannot synchronize the overall engineer effort unless contractors are included in its management.

RECOMMENDATIONS

As discussed, the integration of contractors and engineers can be an effective force multiplier for the JFC. The JFC and the JFC's staff can synchronize a team effort between

[32] Richard B. Jenkins, <jenkinsr@mail.afnorth.nato.int> "RE: Congratulations!" [E-mail to Joel Cross <crossjk@earthlink.net>] 30 January 2001.
[33] Anthony Vesay, "Joint Engineer Training: Top Ten Lessons Learned," Engineer (April 2000): 9-11.

contractors and engineers that will increase operational flexibility, enhance legitimacy, and provide better support to achieve the operational objective. As we move into the uncertain future, CINCs/JFCs must maintain operational flexibility. Continuing to improve the integration of contractors in MOOTW is one way JFCs can do this.

The first recommendation is JFCs should use measures of effectiveness (MOE) to choose the best COA for contractor-engineer integration. Based on the research done here I suggest two MOEs. The first is the ability to maximize engineer efforts on civil-military missions. The criterion for this MOE is the percentage of engineers performing these missions. The second is the ability to accomplish the operational objective. The criterion for this MOE is the probability of mission success if contractors fail to perform. Using these two MOEs will help the JFC determine how much better one COA is than another.

The second recommendation is to ensure engineers and contractors are included in the operational planning process early on and develop a well-coordinated contractor integration plan. Engineers and contractors provide crucial assessments to the LRES that clearly help the staff develop feasible COAs for the use of contractors. The JFC's staff must make a detailed assessment of the operational factors space, force, and time and their affect on contractor integration. These efforts expended by the JFC's staff during planning are essential. Poor assessments have negative effects on operations as this example from operations in Haiti shows.

> The engineer portion of the B&R contract was not integrated with the OPLAN and the support planning of the Engineer Brigade. The initial intent was to use Brown & Root to construct all base camps. This proved to be unfeasible. Funds were not provided to contract for this scope of work. As a result it was decided to have the Engineer Brigade construct the base camps. GP mediums [tents] were used rather than "sea-hut" [wood buildings] construction.[34]

[34] DA, Operation Uphold Democracy Initial Impressions April 1995, VOL II (Fort Leavenworth, KS: U.S. raining and Doctrine Command, Center for Army Lessons Learned, April 1995), 72.

The COA selected by the JFC should address all the integration issues presented here. This will improve the use of contractors in MOOTW and allow the JFC to realize contractors full potential as a combat force multiplier.

The third recommendation is for JFCs to think "out of the box" when deciding what missions to give engineers. Military engineers are capable of conducting missions that support every type of MOOTW. However, they first have to be available. Get engineers out of base camp operations as soon as possible after the lodgment is established. Then give them missions related directly to the operational objective. One "out of the box" example is demining operations. Demining operations are very risky and the possibility of an American casualty is extremely high. However, I believe the risks are worth the taking. By forbidding U.S. soldiers to demine, the United States is losing fundamental experience for engineers and legitimacy for the operation. The loss of experience may cause demining to become a critical vulnerability in the next conflict. Is it better for engineers to conduct these fundamental operations now, during peace, or should they wait until they are in combat? Engineers are trained for this mission and stopping them sends two messages. The first is that U.S. leaders fear engineers are incapable of performing the mission. The second message is that the risks of these actions to save lives of the HN people are not worth the effort. Responses to the messages have an operational impact.

The fourth and final recommendation is the JFC should use military engineers for all initial-entry operations in MOOTW. In some situations contractors can help, but the benefits of using military engineers makes them the best choice. Using engineers to deploy first increases flexibility, gains experience for engineers, and reduces contractor exposure to hostilities in an untested environment. A follow-on support role is the best for contractors.

CONCLUSION

For JFCs to achieve success in their area of responsibility, the use of contractors is now essential. Joint Force Commanders also need the ability to respond rapidly to a crisis in support of national interests for mission success. The JFC's effective integration of contractors into contingency operations increases their ability to respond. Technological advances, political changes, limited strategic resources, and the requirement to conduct operations across the entire spectrum from Humanitarian Assistance to Major Theater War, simultaneously, makes contractors a part of life. According to Dr. Charles Schrader, "The vision of a power projection Army of the future outlined in FORCE XXI has a sixth underlying concept Sustain the Force... to make such a support structure a reality... civilian contractors are... and will continue for the foreseeable future to be--a principal element in the equation."[35] So the only real question left is how best to use them. Integrating their efforts with engineers is a powerful method to increase operational flexibility for the JFC.

[35] Charles Schrader, "Contractors on the Battlefield," Landpower Essay Series (May 1999): 13.

BIBLIOGRAPHY
(SELECTED SOURCES)

Barge, Shep. "Base Camp Construction and Operation." Center for Army Lessons Learned: News from the Front. May-June 1996. <http://call.army.mil/call/nftf/may_jun.96/mj96-2.htm> [6 December 2000].

Bostick, Thomas P. "Bosnia: The Second Time Around." Engineer (April 1999): 2-5.

Castillo, Lourdes A. "Waging War with Civilians: Asking the Unanswered Questions." Aerospace Power Journal, 24 (Fall 2000): 26-31.

Devens, Diane M. "A Jointness Concept for the Future: Civilians, Contractors and Soldiers In Synch." Unpublished Research Paper, U.S. Army War College, Carlisle Barracks, PA: 1998.

Dowling, Maria J. and Vincent J. Fleck. Feasibility of a Joint Engineering and Logistics Contract. Wright Flyer Papers, no. 7. Maxwell Air Force Base, AL: Air Command and Staff College, 1999.

Dulin, Patrick J. "Logistics Vulnerabilities in the Future." Army Logistician (January-February 1998): 20-23.

Eubanks, Catherine. "Engineer Roles is Stabilizing Haiti." Engineer (March 1996): 23-27.

Fortner, Joe A. "Institutionalizing contractor support on the Battlefield." Army Logistician, 32 (July – August 2000): 12-15.

Foster, Susan C. "Contractor on the Battlefield: Force Multipliers or Detractors?" Unpublished Research Paper, U.S. Army War College, Carlisle Barracks, PA: 1998.

Hogan, Melvin S. "Contractors in the Joint Theater: The Need for a Joint Doctrine." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1999.

Jenkins, Richard B. <jenkinsr@mail.afnorth.nato.int> "RE: Congratulations!" [E-mail to Joel Cross <crossjk@earthlink.net>] 30 January 2001.

Judson, William. <sapper45@hotmail.com> "Your questions." [E-mail to Joel Cross <crossjk@earthlink.net>] 15 January 2001.

Klemens, Darren and Kelley Slaven. "Task Force Castle: Joint Engineer Operations in Haiti." Engineer (April 1995): 36-43.

McClure, Robert L. "The Engineer Regiment in Kosovo." Engineer (April 2000): 6-10.

Peters, Katherine M. "Civilians at War." Government Executive (July 1996): 27.

Schrader, Charles R. Contractors on the Battlefield. Landpower Essay Series, no. 99-6. Arlington, VA: Association of the United States Army's Institute of Land Warfare, 1999.

Stephenson, Paul C. "Engineers Keep the Peace in Kosovo." Engineer (February 2000): 6-10.

Transano, Vincent A. "Birth of the Seabees." Military Engineer, 84 (July 1992): 76.

U.S. Department of the Army. Initial Impressions on Haiti, D-20 to D+40. Fort Leavenworth, KS: U.S. Army Training and Doctrine Command, Center For Army Lessons Learned, 1994.

_____. Initial Impressions on Haiti, D-20 to D+150, Vol. II. Fort Leavenworth, KS: U.S. Army Training and Doctrine Command, Center For Army Lessons Learned, 1995.

_____. Initial Impressions on Haiti Volume III. Fort Leavenworth, KS: U.S. Army Training and Doctrine Command, Center For Army Lessons Learned, 1995.

_____. Military Operations in Low Intensity Conflict, FM 100-20/AFP 3-20, Washington, DC: Headquarters, Department of the Army, 1990.

_____. 10th Mountain Division: Operations in Haiti. Fort Drum, NY: 1995.

U.S. Department of Defense. Report to Congress on Kosovo/Operation Allied Force After-Action report. Washington, DC: 2000.

U.S. Joint Chiefs of Staff. Doctrine for Joint Operations. Joint Pub 3-0. Washington, DC: 1 February 1995.

_____. Doctrine for Logistic Support of Joint Operations. Joint Pub 4-0. Washington, DC: 6 April 2000.

_____. Doctrine for Planning Joint Operations. Joint Pub 5-0. Washington, DC: 13 April 1995.

_____. Joint Doctrine for Civil Engineering Support, Joint Pub 4-04. Washington, DC: 26 September 1995.

_____. Joint Doctrine for Military Operations Other Than War. Joint Pub 3-07. Washington, DC: 16 June 1995.

_____. Joint Tactics, Techniques, and Procedures for Peace Operations. Joint Pub 3-07.3. Washington, DC: 12 February 1999.

Vego, Milan N. On Operational Art. Newport, RI: Naval War College, 1998.

Vesay, Anthony. "Joint Engineer Training: Top Ten Lessons Learned." Engineer (April 1999): 12-18.

Womack, John S. "Contingency Contracting – a Commander's Logistics Force Multiplier." Armor, 109 (July – August 2000): 35-37.

Woodward, Susan L. "Failed States: Warlordism and 'Tribal' Warfare." Naval War College Review (Spring 1999): 55-68.

Wynn, Donald T. "Managing the Logistics-Support Contract in the Balkans Theater." Engineer, (July 2000): 36-40.

Young, David L. "Operational Planning for Contractors on the Battlefield." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1998.

3. Services

Additional responsibilities are outlined in DOD Directive 5100.1 and Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)," to include civil engineering support. Specifically, the Services:

a. **Staff, organize, train, and equip civil engineer resources** that can perform the civil engineering support tasks indicated with an "X" in Figure I-2.

b. **Provide**, through their Service components, **input to each CINC's CESP**

Mission	Army	Navy	Air Force	Marine Corps
Emergency repair of war damage to facilities	X	X	X	X
Beddown of units and weapons system	X	X	X	X
Base development, including lines of communication	X	X	X	X
Operation and maintenance of own facilities and installations	X	X	X	X
Crash rescue and fire suppression	X		X	X
Construction management of troop and contract work	X	X	X	X
Limited facility denial measures	X	X	X	X
Limited decontamination		X	X	X
Participation in rear area defense	X	X	X	X
Redeployment and retrograde construction	X	X	X	X
Enemy prisoner of war and civilian internees facilities	X	X		X
Topographic support	X			
Real estate acquisition	X	X	X	
Combating terrorism	X	X	X	X

Figure I-2. Civil Engineering Support Tasks